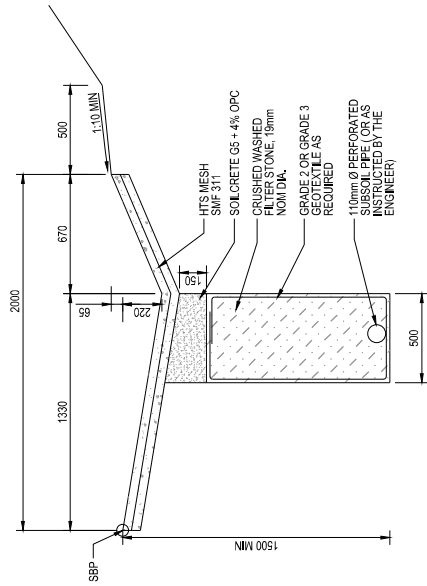


FILTER CRITERIA

- A. TO X IS THE SIZE OF SIEVE THROUGH WHICH X% OF THE FILTER MATERIAL WILL PASS. $D^{60}(F7) =$ AVERAGE SIZE OF OPENINGS OF THE SYNTHETIC FIBRE FILTER FABRIC.
- B. FILTER SAND (FS) IN RELATION TO WATER BEARING STRATA (WS)
- FOR $D^{60}(WS) > 0.05mm$:
 - TO PREVENT BLOCKING OF FILTER SAND: $D^{60}(FS) < 5 \times D^{60}(WS)$
 - FOR PERMEABILITY OF FILTER SAND: $D^{60}(FS) > 5 \times D^{60}(WS)$
 - TO PREVENT BLOCKING OF FILTER SAND:
 - $D^{60}(FS) < 0.25mm$
 - PERMEABILITY REQUIREMENTS NOT NECESSARY
- C. FILTER STONE (FSN) IN RELATION TO FILTER SAND (FS)
- TO PREVENT BLOCKING OF FILTER STONE:
 - $(FSN) < 5 \times D^{60}(FS)$
 - $(FSN) < 25 \times D^{60}(FS)$
 - PERMEABILITY: FILTER STONE MUST BE COARSER THAN SAND AT ALL PERCENTAGES
- D. FILTER STONE (FSN) IN RELATION TO PERFORATIONS IN PIPES
- TO PREVENT BLOCKING OF PERFORATIONS IN PIPES:
 - $(FSN) > 1.2 \times$ DIAMETER OF ROUND PERFORATIONS
 - $(FSN) > 1.2 \times$ WIDTH OF SLOTS
- E. SYNTHETIC FIBRE FILTER FABRIC (SF) IN RELATION TO FILTER SAND (FS)
- TO PREVENT BLOCKING OF SYNTHETIC FIBRE FILTER FABRIC:
 - $C^{60}(SF) < D^{60}(FS)$
 - FOR PERMEABILITY OF SYNTHETIC FIBRE FILTER FABRIC:
 - $C^{60}(SF) > D^{60}(FS)$

NOTES:

- THIS DETAIL SUPERSEDES SUBSOIL DRAIN DETAIL DWG NO: TD-4-SD-001 ON STANDARD DETAILS
- ALL CRITERIA ASSUMES THAT FILTER SAND AND FILTER STONE ARE CONTINUOUSLY GRADED FROM COARSE TO FINE. CRITICAL COMBINATIONS.
- WHERE SUBSOIL DRAINAGE IS INSTALLED IN SOLID ROCK THE POLYETHYLENE LINING MAY BE OMITTED.
- TYPE A OUTLET PREFERABLY TO BE USED WHERE THE NATURAL GROUND LEVELS ALLOW IT. OUTLETS MAY ALSO BE COMBINED WITH CULVERT IN OR OUTLETS.
- ALL CONCRETE SHALL BE CLASS 30/19
- TYPE U2 FINISH
- CONCRETE MUST BE CAST IN ALTERNATIVE LENGTHS OF 2m MAXIMUM WITH EXPANSION JOINTS EVERY 5TH PANEL. (10m)
- SPACING OF CLEANING EYES TO BE AS FOLLOWS:
 - 10m MAX ON STRAIGHT SECTIONS.
 - AT ALL BENDS.
 - OR AS DIRECTED BY THE ENGINEER.
- PLATE WITH THE INSCRIPTION 'CLEANING EYE FOR SUBSOIL DRAIN'. STAMPED ON TO BE AFFIXED TO CONCRETE COVER. LETTER SIZE ON PLATE: 10mm SERIES C. CAPITAL LETTERS.
- SYNTHETIC FIBRE FILTER FABRIC TO BE REPLACED WITH POLYETHYLENE LINING IN THE FOLLOWING INSTANCES:
 - WHERE THE SURROUNDING SOIL IS VERY PERVIOUS.
 - WHERE THE SURROUNDING SOIL HAS A HIGH FINES CONTENT WHICH COULD LEAD TO CLOGGING OF FILTER FABRICS.



REINFORCED TYPE-F CONCRETE CHANNEL DETAIL

(2m WIDTH)
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| PROJECT NUMBER | SANRAL MPO-003-2016/1 |
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| PROJECT DESCRIPTION | THE RECONSTRUCTION OF THE SLOW LANE ON NATIONAL ROUTE N3 SECTION 3 FROM SANCTUARY ROAD (km 14.2) TO LINK ROAD (km 15.2) |
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| DRAWING DESCRIPTION | REINFORCED TYPE-F CONCRETE CHANNEL DETAIL |
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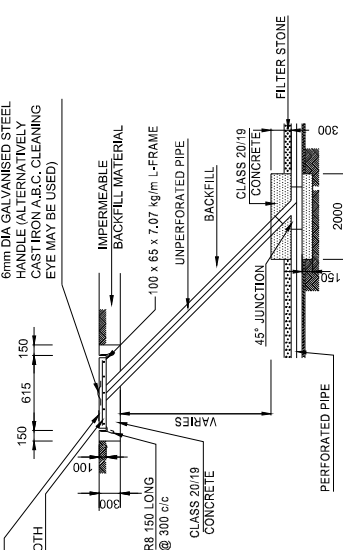
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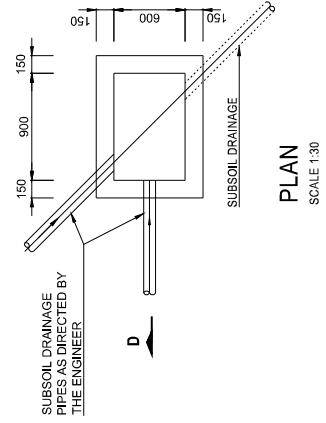
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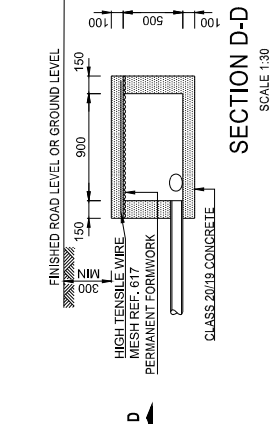
150x100x2 GALVANISED STEEL OR ALUMINIUM PLATE (SEE NOTE 9 ON SHEET 1 OF 3 SHEETS)



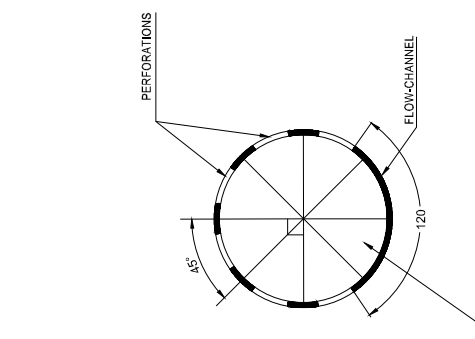
CLEANING EYE IN SUBSOIL DRAIN
SCALE 1:50



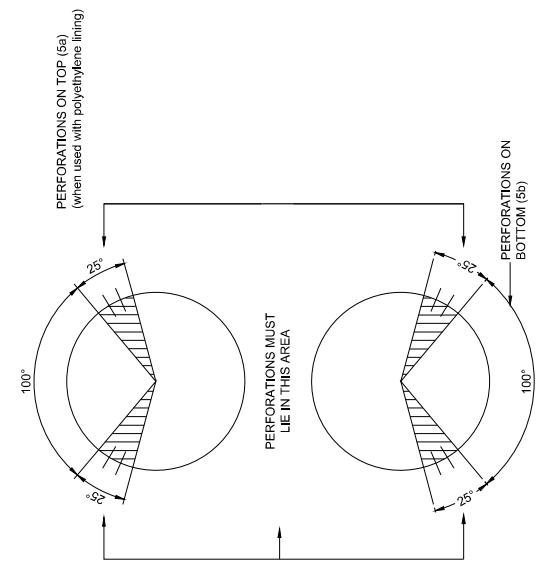
PLAN
SCALE 1:30



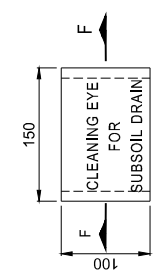
SECTION D-D
SCALE 1:30



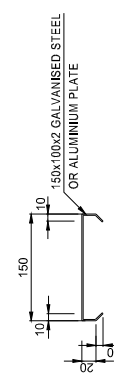
(8 SECTORS OF 45° WITH PERFORATIONS IN 6 OF THE 8 AS INDICATED. POSITION OF PERFORATIONS (HOLE -PIPES) (50) (CAN BE USED FOR BOTH POLYETHYLENE LININGS OR SYNTHETIC FIBRE FILTER FABRIC.)



POSITION OF PERFORATIONS IN SUBSOIL DRAINAGE PIPES
(WHEN USED WITH SYNTHETIC FIBRE FILTER FABRIC)
SCALE 1:2



PLAN
SCALE 1:5



SECTION F-F
SCALE 1:5

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| PROJECT NO. | 13000 |
| DATE | 31 October 2019 |
| BY | Sanral Group |

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| <p>GIBB Infrastructure Architects</p> | <p>EAST LONDON OFFICE 85 The Strand London EC4A 3DF PO Box 1044 South Africa Tel: (021) 796 3600</p> | <p>SANRAL SOUTH AFRICA BUILDING BETTER ROADS THROUGH BETTER ROADS</p> | <p>EASTERN REGION 85 The Strand London EC4A 3DF PO Box 1044 South Africa Tel: (021) 796 3600</p> | <p>EXTENT THE RECONSTRUCTION OF THE SANRAL NATIONAL ROUTE 18 SECTION 3 FROM SANCTUARY ROAD (Km 15.2) TO LINK ROAD (Km 12.2)</p> | <p>PROJECT NUMBER SANRAL N18-03-03-01/01</p> |
| | <p>DATE 2019/10/31</p> | <p>SCALE AS SHOWN</p> | <p>PROJECT DESCRIPTION THE RECONSTRUCTION OF THE SANRAL NATIONAL ROUTE 18 SECTION 3 FROM SANCTUARY ROAD (Km 15.2) TO LINK ROAD (Km 12.2)</p> | <p>PROJECT NUMBER SANRAL N18-03-03-01/01</p> | |
| <p>NO. 1</p> | <p>DATE 2019/10/31</p> | <p>REVISION</p> | <p>CONSULTANT</p> | | |